What is claimed is:

1. (amended) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

wherein said functional group forms said thermo-reversible cross-linked structure which is covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature,

and said covalent bond is at least one of a Diels-Alder type and carboxyl-alkenyloxy type.

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (amended) The biodegradable resin according to Claim 1, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, alkenyl group, alkenyloxy group, and group having a conjugated double bond.

7. (amended) The biodegradable resin according to Claim 1 or 6, wherein said biodegradable resin includes polyesters having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyesters.

8. (cancelled)

9. (cancelled)

10. (amended) The biodegradable resin according to Claim 1 or 6, wherein said biodegradable resin includes polyols having at least one

functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyols.

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (cancelled)

15. (cancelled)

16. (cancelled)

17. (cancelled)

18. (cancelled)

19. (cancelled)

20. (cancelled)

21. (cancelled)

22. (new) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

wherein said biodegradable resin includes polyamino acids having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyamino acids.

23. (new) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin includes polysaccharides having at least one functional group selected from the group consisting of a hydroxyl group, carboxyl group and amino group, and modified bodies of the polysaccharides.

24. (new) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling

and cleaved by heating, wherein said biodegradable resin is polylactic acid or modified body of the polylactic acid.

25. (new) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

wherein said biodegradable resin is polybutylene succinate or modified body of the polybutylene succinate.

26. (new) The biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 25, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

27. (new) The biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 26, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

28. (new) The biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 27, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

29. (new) The biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 28, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

30. (new) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

31. (new) The biodegradable resin according to Claim 30, wherein said

covalent bond is of at least one mode selected from the group consisting of Diels-Alder type, nitroso dimer type, acid anhydride ester type, halogen-amine type, urethane type, azlactone-hydroxyaryl type and carboxyl-alkenyloxy type.

32. (new) The biodegradable resin according to Claim 30 or 31, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, amino group, hydroxyaryl group, alkenyl group, alkenyloxy group, nitroso group, halogen, group having a conjugated double bond, group having an acid anhydride structure, group having an isocyanate structure, and group having an azlactone structure.

33. (new) The biodegradable resin according to Claim 30, wherein said functional group forms said thermo-reversible cross-linked structure which is covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature.

34. (new) The biodegradable resin according to Claim 33, wherein said covalent bond is at least one of a Diels-Alder type and carboxyl-alkenyloxy type.

35. (new) The biodegradable resin according to Claim 33 or 34, wherein said functional group is at least one group selected from the group consisting of a hydroxyl group, carboxyl group, alkenyl group, alkenyloxy group, and group having a conjugated double bond.

36. (new) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating,

wherein said first biodegradable resin is the biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 35.

37. (new) The biodegradable resin composition according to Claim 36, wherein said first functional group and said second functional group are identical.

38. (new) A biodegradable resin composition comprising
a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,
and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating,
wherein said first biodegradable resin is the biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 35.

39. (new) The biodegradable resin composition according to Claim 38, wherein said linker has two or more identical second functional groups.

40. (new) A biodegradable molded body comprising the biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 35 or the biodegradable resin composition according to any of Claims 36 to 39.

41. (new) A method of producing the biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 35, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

42. (new) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group

forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating,

wherein said first biodegradable resin is the biodegradable resin according to any of Claims 1, 6, 7, 10 and 22 to 35.